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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/518,082

08/09/2005

Jean-Pierre Moy

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2893

33308

7590

04/24/2009

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EXAMINER

PEACE, RHONDA S

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/518,082	<b>Applicant(s)</b> MOY ET AL.	
	<b>Examiner</b> Rhonda S. Peace	<b>Art Unit</b> 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6, 10-16 and 18 is/are allowed.
- 6) ☒ Claim(s) 7-9 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/3/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 4/3/2009 was filed after in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 7-9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hehlen et al (US 6,580,842).**

Pertaining to claims 7-9 and 17, Hehlen et al discloses a device 100 for positioning an optical component 116 between two optical waveguides 104 comprising a support 102 having optical waveguides 104 formed therein, wherein said support 102 has a blind cut 114 so as to separate each of said waveguides 104 into two parts that are in aligned with one another. See col. 4 lines 42-53, and Figure 1. Said cut 114 has a first plane face perpendicular to a longitudinal axis of the said waveguides 104, and wherein the component is positioned on the first plane face as seen in Figure 1. See col. 7 lines 31-38. Hehlen et al explicitly states the width of the cut, or trench, 114 may be *equal* to the width of the component 116, and therefore Hehlen et al discloses an embodiment wherein the component 116 is positioned adjacent to and in contact with both the first plane face and the second plane face of the optical waveguide 104, as the trench is only as wide as the component itself. See col. 7 lines 15-20. The alignment of said waveguides results in the longitudinal axis of each of said two parts of said waveguides to both lie along a common straight line within the same plane with respect to one another; however, certain embodiments of the device 100 may require lateral and/or angular displacement. See col. 9 lines 20-29. The cut 114 also has a second plane face forming an acute angle with the said first plane face. See col. 7 lines 31-43.

However, Hehlen et al does not disclose forming the waveguides as described above by fixing a capillary tube through said support by gluing said tube to the support in such a way as to form an optically homogenous block, wherein said cut separates the said tube into two parts, and optical fibers are provided within said two parts. The waveguides of Hehlen et al are formed by ion exchange, and therefore form an integral structure with said support. One of ordinary skill in the art recognizes optical fibers and optical waveguides as equivalent elements, and the substitution of an optical fiber for an optical waveguide would have been obvious to one of ordinary skill in the art because the substitution of an optical fiber for an optical waveguide would have yielded predictable results (i.e. the coupling of light along a confinement direction) at the time of the invention. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007). Moreover, it would have been obvious to one of ordinary skill in the art to form the above device with a capillary tube which is fixed and cut as required by the current invention, instead of providing a support for ion exchange-formed waveguides, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179. The support of Hehlen et al is the "formerly integral structure," and the capillary tube fixed via gluing through said support in such a way as to form an optically homogenous block are the "various elements formerly formed as an integral structure." Moreover, Hehlen et al does not disclose said fibers furnished with lenses at their end, and instead discloses waveguides having tapered sections 124 and 130 that serve to collimate the traveling light, essentially performing the same function as GRIN lenses. Therefore,

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and in conclusion, it would have been obvious to substitute an optical fiber in place of the prior art's waveguide for the reasons cited above, and further it would have been obvious to substitute a GRIN lens for the tapered sections as taught by Hehlen et al, as the substitution would have yielded predictable results (i.e. the collimation of light) at the time of the invention. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007).

***Allowable Subject Matter***

**Claims 1-6, 10-16, and 18 are allowed.**

The following is an examiner's statement of reasons for allowance: The most applicable prior art, Pan (US 5,706,371) does not disclose or reasonably suggest a method of positioning an optical component between two optical fibers furnished at their end with lenses, wherein said method comprises drilling a support in such a way as to fix therein a capillary tube whose inside diameter is designed so as to slip an optical fiber thereinto, fixing said tube in the drilling of said support, making a blind cut of the support and of the capillary tube in such a way as to separate the capillary into two parts, a first plane face of the cut being perpendicular to a longitudinal axis of the capillary tube such that said two parts are aligned with each other, positioning the component on the first plane face, and positioning an optical fiber into each of said two parts. While the prior art discloses structures, such as Pan, which have similar structural features to the present invention, this most applicable art does not disclose, nor does it reasonably suggest a method for creating such a device wherein the support is drilled so as to fix a capillary tube therein, the tube is fixed in the drilling of the support, a blind cut is made in the support in such a manner as to separate the capillary

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tubes, and wherein the first plane face of the cut is perpendicular to the longitudinal axis of the capillary tube. Further, an optical component is then positioned on the first plane face of the cut, and an optical fiber is positioned in each of the capillary tubes.

Moreover, Hehlen et al fails to disclose or reasonably suggest a method as required by claims 1-6, 10-16, and 18.

### ***Response to Arguments***

**Applicant's arguments filed 3/19/2009 have been fully considered but they are not persuasive.**

Applicant argues Hehlen et al fails to disclose the component as being positioned adjacent to and in contact with the first plane face which is perpendicular to the longitudinal axis of the waveguide. The Examiner respectfully disagrees.

Hehlen et al explicitly states the width of the cut, or trench, 114 may be *equal* to the width of the component 116, and therefore Hehlen et al discloses an embodiment wherein the component 116 is positioned adjacent to and in contact with both the first plane face and the second plane face of the optical waveguide 104, as the trench is only as wide as the component itself. See Figure 3, col. 7 lines 15-20. As recognized by the Applicant on page 6 of the response filed 9/22/2008, Hehlen et al discloses the sidewalls of the trench are perpendicular to the substrate upper surface, thereby causing the component to be orientated orthogonally to the substrate plane. See Hehlen et al, col. 7 lines 20-24 and Figure 3. Moreover, it is clear from the discussion of Hehlen et al with regards to waveguide formation and the provided Figures, that the waveguides are intended to be formed parallel to the surface of the substrate, thereby

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resulting in the isolator element being positioned perpendicular to the waveguide's longitudinal axis. However, Hehlen et al also discloses the isolator element may be inserted into the trench at a slight angle. See col. 7 lines 38-42. Therefore, in the event that the waveguides are not formed perfectly parallel to the upper surface of the substrate, due to for example, a manufacturing error, and instead the waveguides are formed at a slight angle with respect to the upper surface of the substrate, Hehlen et al nonetheless discloses an embodiment wherein the isolator element is placed perpendicular to the longitudinal axis of the waveguide.

Moreover, Applicant argues the waveguides of Hehlen et al cannot be substituted by an optical fiber, as Hehlen et al requires waveguides with expanded mode sections and also utilizes polarization multiplexers which cannot be replaced by a fiber. The Examiner respectfully disagrees.

The Examiner maintains, as stated above, that the substitution of an optical fiber in place of an optical waveguide is considered obvious in view of the prior art, as an optical fiber and an optical waveguide are equivalent elements, wherein the predictable result of optically confining an optical signal is achieved upon the said substitution. To the Applicant's first argument that an optical fiber cannot act as a substitution for an optical waveguide as the waveguide of Hehlen et al includes expanded mode sections: the existence and use of tapered optical fibers is well known in the optical arts, and therefore the fact that the waveguides Hehlen et al are tapered does not preclude the obviousness of substituting an optical fiber in place of an optical waveguide. To the Applicant's second argument, Figure 1, which is the cited portion of the Hehlen et al



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relied upon above, does not require the polarization multiplexers to which the Applicant refers. Therefore, the existence and use of polarization multiplexers is moot when considering the obviousness of using an optical fiber instead of an optical waveguide in the device as shown in Figure 1 of Hehlen et al.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda S. Peace whose telephone number is (571)272-8580. The examiner can normally be reached on M-F (8-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on (571) 272- 2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rhonda S. Peace/  
Examiner, Art Unit 2874

/Uyen-Chau N. Le/  
Supervisory Patent Examiner, Art Unit 2874